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plants growing under the immediate influence of the acid fumes and others growing under similar conditions but not within the smoke zone, must be made.

—H. HASSELBRING.

Viticulture.—Recent publications from the Royal Hungarian Central Institute of Viticulture are as follows: Volume III, part 2, consists of chemical analyses of the stems and shoots of American species used for stocks in Hungary.¹⁴ The points determined were the moisture content, ether extractives (oils, fats, waxes, gums, and organic acids not further determined), alcoholic extractives (tannin, glucotannin, vanillin, and organic acids), nitrogen, starch, cellulose, and proteids. The paper contains a large number of analyses made at different seasons, but no general results have yet been reached, and it is difficult to see what may be expected. Part 3 of this volume is a small paper by Istvánffi¹⁵ in which he describes a disease of the vine caused by Phyllosticta Bizzozeriana Massal. The disease is not of great importance, but has been mistaken for the black rot, one of the most dangerous vine diseases. In the part 4 ISTVÁNFFI¹⁶ gives the results of his investigations on the gray rot, caused by Botrytis cinerea. The first part of this paper is taken up with the effects of various kinds of poisons and other treatments as cold, drying, etc., on the spores of the fungus. One of the most striking results is the unusually high resistance which the spores are said to have to copper. Spores were kept twenty-four hours in different strengths of Bordeaux mixture ranging from 1 to 10 per cent., to which was then added must containing I per cent. of tartaric acid, so that the resulting solutions contained the equivalent of 0.3 per cent. CuSO₄. Of the spores from the lowest strength mixture 38-40 per cent, germinated, of those in the highest 10-12 per cent. germinated. Spores sown on berries in 3 per cent. Bordeaux mixture germinated and penetrated the epidermis. Spores, kept one hour in a 2 per cent. solution of CuSO₄, which was then diluted with ten times its volume of must, germinated. Many other similar experiments are given. The second part of the paper deals with the development and life history of Botrytis cinerea and methods of control. Very little new is added to the life history of the fungus. For treatment, spraying with a 5 per cent. solution of calcium bisulfid is recommended.—H. HASSELBRING.

Endotrophic mycorhiza.—The long and important paper of Gallaud¹⁷ on this subject merits brief summary, as his conclusions are quite revolutionary. He has described for the first time the anatomical and cytological characters of

¹⁴ GASPAR, J., Analyses des sarments américains. Ann. Inst. Cent. Ampél. Roy. Hongrois 3:57-166. pls. 4-12. 1905.

¹⁵ ISTVÁNFFI, Gy. de, D'une maladie de la vigne causée par le Phyllosticta Bizzozeriana. Idem, 167–182. pl. 13. 1905.

¹⁶ ISTVÁNFFI, Gy. de, Études microbiologiques et mycologiques sur le rot gris de la vigne. *Idem*, 183–360. *pls. 14–21*. 1905.

 $^{^{17}}$ Gallaud, I., Études sur les mycorhizes endotrophes. Rev. Gén. Bot. $^{17}\colon pls.\ 4.\ 1905.$